

Remarks

Reconsideration of the above-identified application in view of the present Amendment and remarks is respectfully requested.

By the present Amendment claims 14 and 92 have been amended, claims 10 and 86 have been cancelled, and new claims 104-112 have been added. Thus, claims 1-4, 7-9, 14, 16-17, 80-81, 84-85, 88-89, 92-94 and 98-112 are pending.

Claims 10, 14, 86 and 92 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants respectfully traverse this rejection. Claims 14 and 92 were amended in the manner suggested by the Patent Office in paragraph 5 of the Office Action.¹ Claims 10 and 86 have been cancelled. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 112, second paragraph rejections.

Claims 1-4, 7-10, 14, 16-17, 80-81, 84-86, 88-89, 92-94, 98 and 103 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,214,777 to Li et al., hereinafter *Li*. Applicants respectfully traverse this rejection.

Given the length of prosecution and the difference between the reference being applied, the Applicants wish to start off with a brief overview of the subject matter of the invention and the state of the art.

The present invention is directed at providing an improved cleaning composition for cleaning metal surfaces, such as for cans made of aluminum and aluminum-containing alloys,

¹ In paragraph 5 of the Office Action, the Patent Office indicated that claim 14 was rejected. The phrase the Patent Office rejected is not found in claim 4 but is instead found in claim 14. Accordingly, Applicants have treated paragraph 5 of the Office Action as rejecting claim 14 rather than claim 4.

during the metal forming process.² As set forth in the background, cans and other containers made of aluminum and alloys thereof, as a result of their forming operation, often contain lubricants, forming oils and residual aluminum fines on the metal surfaces. The present invention is directed at providing a cleaning composition for these types of materials. Thus, the cleaning composition of the present application is particularly useful for cleaning aluminum and aluminum alloy materials (as well as other metals) to remove and dissolve (aluminum) fines and for cleaning lubricating oils from the metal.

The prior art does not disclose, teach or suggest the claimed cleaning composition for formed metal articles. Due to the demands of this cleaning process, the prior art has used very different cleaning compositions than what is being claimed. Again, as set forth in the background, chromic acid or salts thereof have been previously utilized in can cleaning technologies. However, the inherent toxicity of the hexavalent and trivalent chromium compounds contained therein and the resultant waste disposal problem created by the presence of chromium in the cleaner effluent makes these types of cleaners undesirable for use.

Several prior art metal cleaning compositions contain nonylphenols and rosin ethoxylates. Both of these chemicals have recently come under governmental scrutiny and are regulated in several countries. Nonylphenols are suspected of being endocrine disruptors and rosin ethoxylates are thought to have poor biodegradability. Moreover, high performance cleaners that include rosin ethoxylates tend to be somewhat expensive.

Other acidic cleaners are known which omit chromates, nonylphenols, and rosins, but fall short in detergency, stability of the cleaner concentrate and/or are excessively foaming.

² As will be discussed further below, *Li* is directed to a lubricant, and *Yianakopoulos*, which will be discussed separately, is directed to an all-purpose household liquid detergent.

After considerable research, applicants invented a suitable low cost cleaning composition for formed metal that has the requisite detergency, is stable, safe, low foaming, and has improved biodegradability

Claim 1 recites:

1. A cleaning composition for formed metal articles, the cleaning composition comprising water and:

A) an ethoxylate of an alcohol present in an amount from about 0.1 to 3 g/l, the alcohol having Formula I:



wherein R₁ is a saturated or unsaturated, straight-chain or branched alkyl having from 12 to 25 carbon atoms and the ethoxylate is a 10 to 41 mole ethoxylate;

B) an inorganic pH adjusting component present in an amount such that the pH of the cleaning composition is less than 2; and

C) at least one nonionic surfactant that is different than component A present in an amount from about 0.1 to about 3 g/l, wherein the cleaning composition has a water-break-free percent from 84% to 100%.

The prior art does not disclose, teach or suggest the claimed invention.

To begin with, Li is not a proper reference. It is not analogous to the present invention. As acknowledged in the Office Action in paragraph 6, *Li* teaches a lubricating composition - not a cleaning composition for cleaning metal surfaces, such as for cans made of aluminum and aluminum-containing alloys.

Analogous art was recently discussed in the Federal Circuit Decision, *Innovention Toys LLC v. MGA Entertainment, Inc.*, a copy of which is attached for the Examiner's convenience.

A reference qualifies as prior art for a determination under § 103 when it is analogous to the claimed invention. *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992). “Two separate tests define the scope of analogous art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.” *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). “A reference is reasonably pertinent if . . . it is one which, because of the matter with which it deals, logically would have commanded itself to an inventor’s attention in considering his problem.” *Clay* 966 F.2d at 659. “If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection.” Id.

Innovention Toys, slip opinion at pages 12-13 (emphasis added).

Li is not directed to the same field of endeavor as Applicant. As discussed above, *Li* discloses a lubricant composition, not a cleaning composition. The lubricant composition of *Li*, contrary to a cleaning composition, is to remain on the metal material to provide a lubricating effect. It is not removed to provide a cleaning effect. Moreover, the lubricant composition of *Li* is used during the conveying and filling of the containers. *Li*’s composition is being used as the containers are being filled. In contrast, the present invention is used to clean metallic articles, such as containers, during container formation.

As such, in order to be a proper reference, *Li* must be directed to the particular problem with which the invention is involved. *Li* is not. As set forth above, Applicants endeavored to provide a suitable low cost cleaning composition for formed metal that has the requisite detergency, is stable, safe, low foaming, and has improved biodegradability while avoiding undesirable materials like hexavalent chromium compounds. *Li* is directed to providing a lubricant that stays on the can and is compatible with the beverages. Col. 3, ll. 2-6. *Li* has nothing to do with the inventors’ problem. Thus, *Li* is non-analogous and the rejection should be withdrawn.

Even if *Li*, assuming *arguendo*, were considered to be a suitable reference, it would not disclose, teach or suggest all of the limitations of claim 1.

Li discloses a composition having a pH of 3 to 9.5. Notably, claim 1 recites that the pH of the cleaning composition is less than 2. With pH being measured on a logarithmic scale, the difference between a pH of 3 and a pH of 2 is patentably distinct. Applicants take exception with the Patent Office's statement that "with respect to the pH of the composition, as the 'word' about permits some tolerance, the lower pH limit of about 3 may be considered to read on pH less than 2." A pH of less than 2 renders the composition quite acidic. In setting the pH range of 3 to 9.5, as *Li* does, *Li* is purposely avoiding the various acidic pH of 2 and less. While the term "about" may provide some tolerance, it is unreasonable to grant such a wide tolerance that would allow *Li*'s pH of about 3, to read on a pH of less than 2, which is 10 times more acidic than *Li*'s pH of 3. pH is on a logarithmic scale. As a result, each whole pH value below 7 is ten times more acidic than the next higher value. For example, pH 2 is 10 times more acidic than pH 3 and 100 times (10 times 10) more acidic than pH 4. Applicants respectfully submit that the cases the Examiner cites to are not applicable. None are related to pH or logarithmic scales and none are to disclosed values that are as disparate as the values at issue here. Surely the term "about" should not be intended to cover a value 10 times greater than the value it modifies.

Moreover, the Patent Office acknowledges that the "water-break-free" limitation is not disclosed, taught or suggested in *Li*, but states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably expect the composition of *Li* to have similar water-break-free percent reductions as those recited because similar ingredients have been utilized. (Emphasis added.) Applicants respectfully disagree with this statement. As set forth above, the present invention is directed at providing a cleaning composition wherein the composition of *Li* is directed at providing a lubricant. These usages are for entirely different purposes and at entirely different stages of the container utilization process. As set forth above, the composition of the present invention is used prior to the filling operation

such that when the container is filled, it will be sufficiently clean. Whereas, the composition of *Li* is used during the filling operation after it has already been cleaned. Moreover, these compositions cannot be considered to be substantially similar. *Li* includes a quaternary phosphonium compound as its primary ingredient. Such a component is not found in Applicants' composition. Accordingly, Applicants respectfully disagree with this statement from the Patent Office.

Furthermore, it would not have been obvious, as the Patent Office suggests, to select a specific surfactant combination from the broadly recited group of *Li*'s surfactants. There is no suggestion anywhere, other than Applicants' own disclosure, to select the specific claimed surfactant combination from *Li*'s broadly recited list. Applicants take exception with the Patent Office's statement on page 4 of the Office Action that:

[I]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared a composition comprising a combination of nonionic surfactants in their optimum proportions wherein one contains a 40 mole ethoxy group, and another with a lower ethoxy group because it is taught by *Li* at column 7, lines 52-53 that one or more surfactants may be used, and to optimize the ethylene oxide and alky groups of the nonionic surfactants because it has been held to be obvious to select a value in a known range by optimization for the best results. As to optimization results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results which properly rebuts the *prima facie* case of obviousness. (Emphasis added.)

To begin with, *Li* in stating that "one or more surfactants may be used" in no way shape or form makes it obvious to provide a combination of nonionic surfactants in their optimum proportions wherein one contains a 40 mole ethoxy group and the other with a lower ethoxy group. There is no teaching in *Li* to provide such an "optimum combination."

Furthermore, the skilled person is not choosing from a finite number of identified and predictable solutions to the problem. The Patent Office is essentially making an obvious to try argument, but the list of surfactants from both references is extensive. This is general guidance that is insufficient. See, *O'Farrell* where trying numerous possibilities with no direction from the prior art as to what is likely to succeed would not render the invention obvious. This is not routine experimentation, particularly where our own results show that the performance of surfactants is unpredictable.

Li makes a broad statement that "one or more than surfactants may be used" and the Patent Office improperly concludes that this statement would lead one of ordinary skill in the art at the time of Applicants' invention to select the claimed components in the claimed proportions. *Li* is directed to a lubricant – not a metal cleaner. *Li*'s invention has nothing to do with providing Applicants' type of composition. Even if it did, this does not amount to optimization of results effective variables. The listing of multiple surfactants that can be used in a lubricant does not give rise to optimization of a results effective variable. A result effective variable only is a variable (parameter) that has been found to achieve a recognized result. However, such a parameter has not been identified by *Li*.

Furthermore, a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.).

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103 rejection of claim 1 in view of *Li*.

Claims 2-4, 7-10, 14, 16-17 and 101-103 all depend either directly or indirectly from claim 1 and are therefore allowable for at least the same reasons as claim 1. Moreover, these claims add further limitations that render them separately allowable.

Independent claim 80 recites similar limitations as does independent claim 1 and is therefore patentable for substantially the same reasons as independent claim 1, as well as for its own specific limitations.

Claims 81, 84-85, 88-89, and 92-94 all depend either directly or indirectly from independent claim 80, and are therefore allowable for at least the same reasons as independent claim 80.

Independent claim 98 recites similar limitations as does independent claim 1 and is therefore patentable for substantially the same reasons as independent claim 1, as well as for its own specific limitations.

Claims 1-4, 7-10, 14, 16-17, 80-81, 84-85, 88-89, 92-94, 98 and 101-103 were rejected under 35 U.S.C. § 103 as being unpatentable over Yianakopoulos, hereinafter *Yianakopoulos*. Applicants respectfully traverse this rejection.

To begin with, *Yianakopoulos* is not a proper reference. It is not analogous to the present invention. *Yianakopoulos*, which is assigned to *Colgate-Palmolive*, teaches an all-purpose household liquid detergent, (Col. 1, ll. 14-18.) - not a cleaning composition for cleaning metal surfaces, such as for cans made of aluminum and aluminum-containing alloys.

Yianakopoulos is not directed to the same field of endeavor as Applicant. A discussed above, *Yianakopoulos* discloses an all-purpose household liquid detergent. In contrast,

the present invention is used to clean metallic articles, such as containers, during the metal forming container formation.

As such, in order to be a proper reference, *Yianakopoulos* must be directed to the particular problem with which the invention is involved. *Yianakopoulos* is not. As set forth above, Applicants endeavored to provide a suitable low cost cleaning composition for formed metal that has the requisite detergency, is stable, safe, low foaming, and has improved biodegradability while avoiding undesirable materials like hexavalent chromium compounds. *Yianakopoulos* is directed to providing an all-purpose household liquid detergent that minimizes corrosion. Col. 3, ll. 34-37. *Yianakopoulos* accomplishes this by providing an anti-corrosion system. Col. 3, ll. 39-41. *Yianakopoulos* has nothing to do with the inventors' problem. Thus, *Yianakopoulos* is non-analogous and the rejection should be withdrawn.

Even if *Yianakopoulos*, assuming *arguendo*, were considered to be a suitable reference, it would not disclose, teach or suggest all of the limitations of claim 1.

Yianakopoulos does not disclose, teach or suggest a cleaning composition comprising an ethoxylate of an alcohol having 12 to 25 carbon atoms and 10 to 41 mole ethoxylate and another nonionic surfactant different from the first. However, the Patent Office states that it would have been obvious since *Yianakopoulos* teaches at least one nonionic surfactant and to have selected the portion of the prior art's range which is within the range of Applicants' claims would have been obvious because it is a known range of optimization for the best results. Again, *Yianakopoulos* makes a broad statement and the Patent Office is failing to appreciate Applicants' invention. Applicants' invention is a specific composition which provides a desired result as a cleaning composition for formed metal articles. The skilled person is not choosing from a finite number of identified and predictable solutions to the problem. The examiner is essentially making an obvious to try argument, but the list of surfactants from both references is extensive. This is general guidance that is insufficient. See, *O'Farrell* where trying numerous possibilities with no direction from the prior art as to what is likely to succeed would

not render the invention obvious. This is not routine experimentation, particularly where our own results show that the performance of surfactants is unpredictable.

With respect to providing unexpected results, the Patent Office is invited to peruse the examples wherein the benefit and the unexpected results of the invention are shown. Furthermore, again this is not a result effective variable and thus the Patent Office's rationale does not apply. As the examples show, the cleaner composition for metal surfaces is an unpredictable art. The results show that Applicants, who are quite skilled in the can cleaner art, did not find predictability in achieving the combination of features sought, specifically, water break free, low foam, and little re-deposition of the soil on the cans. Furthermore, a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.).

Yianakopoulos fails to exhibit a water-break-free percent reduction as claimed, Applicants contend that it would not be obvious that *Yianakopoulos* composition would have such a water-break-free percent reduction since they are directed at entirely different usages and have very different compositions.

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103 rejection of claim 1 in view of *Yianakopoulos*.

Claims 2-4, 7-10, 14, 16-17 and 101-103 all depend either directly or indirectly from claim 1 and are therefore allowable for at least the same reasons as claim 1. Moreover, these claims add further limitations that render them separately allowable.

Independent claim 80 recites similar limitations as does independent claim 1 and is therefore patentable for substantially the same reasons as independent claim 1, as well as for its own specific limitations.

Claims 81, 84-85, 88-89, and 92-94 all depend either directly or indirectly from independent claim 80, and are therefore allowable for at least the same reasons as independent claim 80.

Independent claim 98 recites similar limitations as does independent claim 1 and is therefore patentable for substantially the same reasons as independent claim 1, as well as for its own specific limitations.

Applicants note the allowance of claim 99 with appreciation.

Claims 104-109 have been added. The prior art does not disclose, teach or suggest the limitations of these claims. Claim 104 is similar to claim 98 except that it has the transition phrase "consisting of". The prior art does not disclose, teach or suggest the limitations of claim 104. For instance, *Li* includes a quaternary phosphonium compound in antimicrobial agents, among other components. *Yianakopoulos* includes an anticorrosion system, and perfumes, among other components.

Claim 105 depends from claim 104 and further includes the limitation of a fluoride component. This is not disclosed, taught or suggested by the prior art.

Similarly, claim 106 includes a fluoride component and depends from claim 1. This limitation is not disclosed, taught or suggested by the prior art.

Claims 107-109 similarly add limitations that depend further from claim 1 and are not disclosed in the prior art.

Applicants submit that the claims are in condition for allowance and respectfully request a notice to that effect. If the Examiner believes that a discussion or claim amendment of a minor nature would advance the prosecution of the application, the Examiner is highly encouraged to telephone the Applicants attorney at the number given below.

The three month Petition fee of \$1,110 and the additional claims filing fee of \$156.00 pursuant to 37 C.F.R. § 1.17(a) is being charged to our Deposit Account No. 02-3978 via electronic authorization submitted concurrently herewith. Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,

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